Building High-Value Care Bridges

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@ChrisMoriates

The University of Texas at Austin
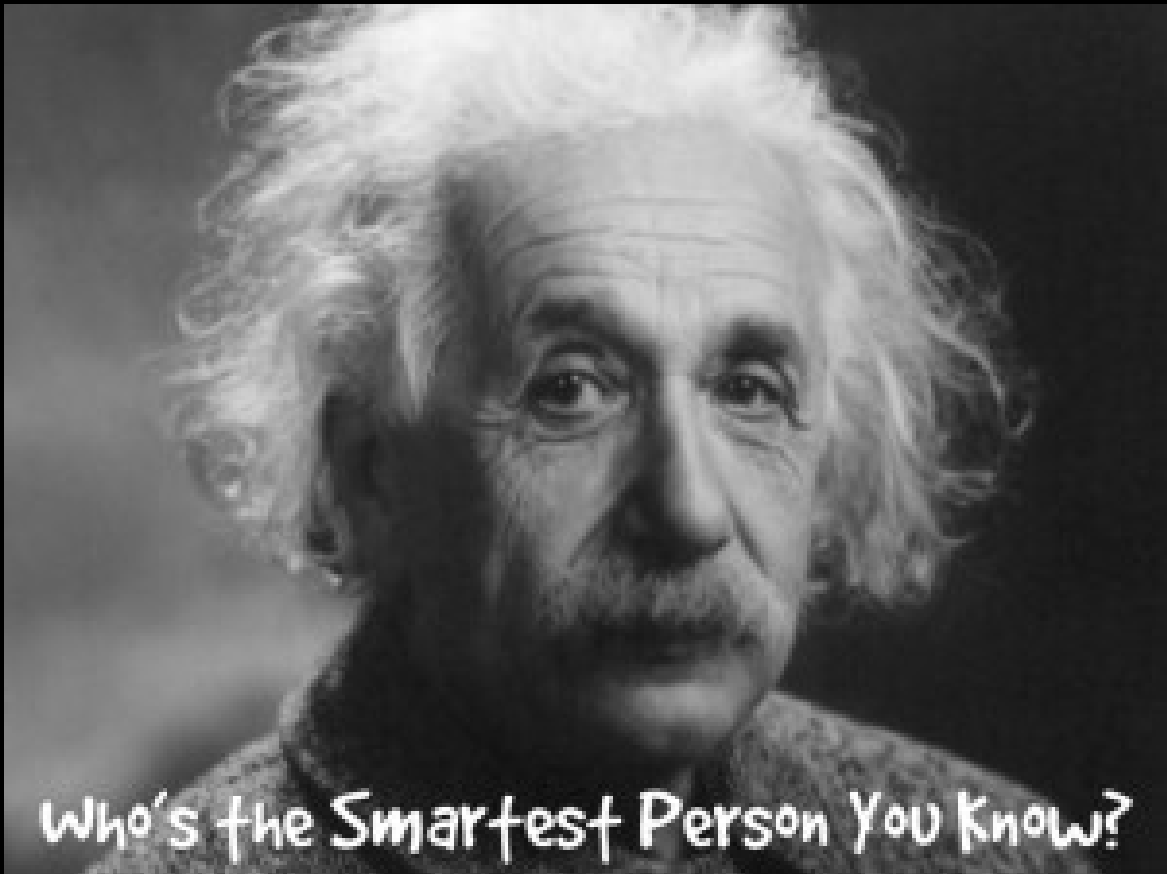Dell Medical School

COSTS of CARE

Disclosures

Grant support from

ABIM Foundation, Macy Foundation, Episcopal Health Foundation, and ACGME

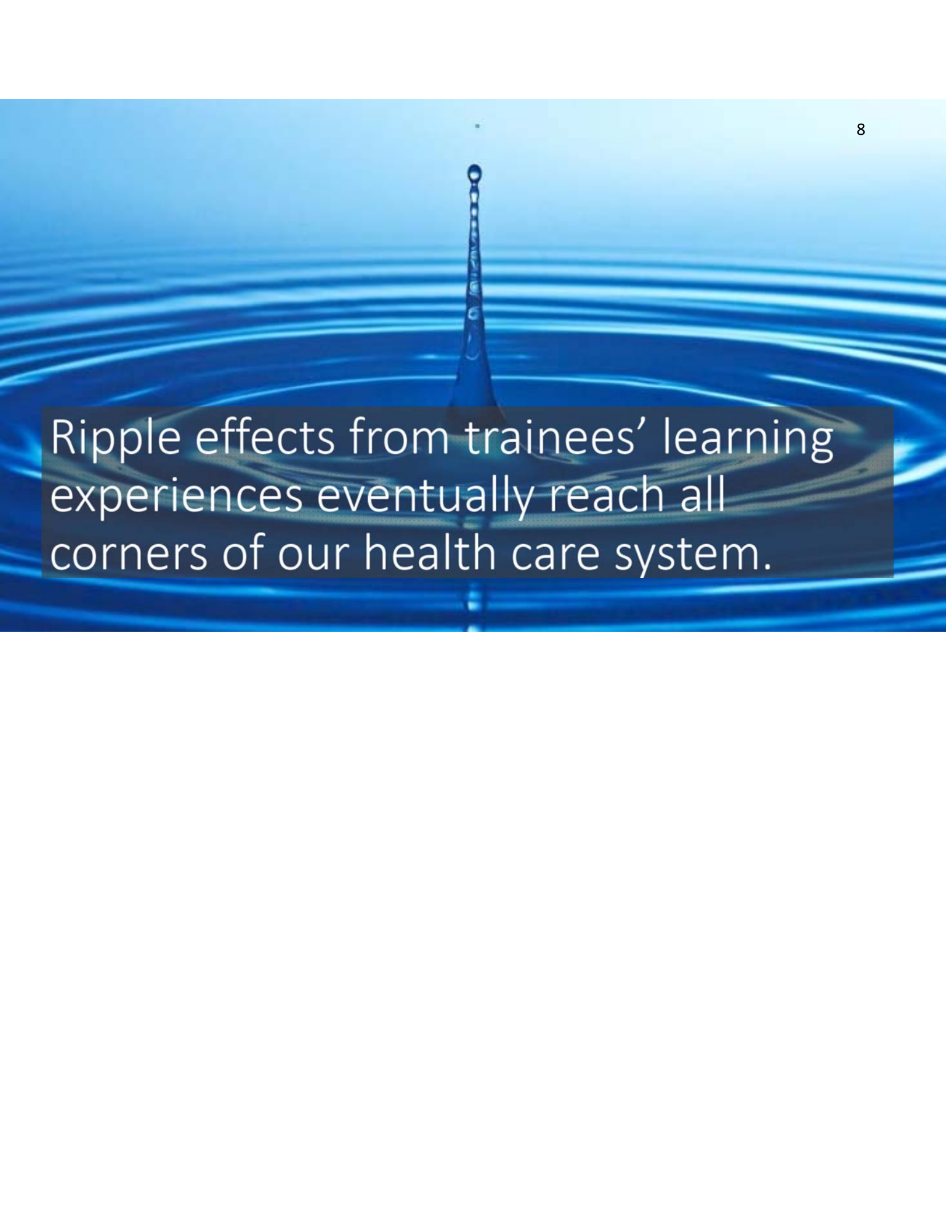My story is the story of getting a trainee involved

Who's the Smartest Person You Know?

¯_(ツ)_/¯

The environments in which medical trainees learn have life-long effects on their medical practices.

1. Chen C, Petterson S, et al. JAMA. 2014;312(22):2385-2393.
2. Sirovich BE, Lipner RS, Johnston M, Holmboe ES. JAMA Intern Med. 2014;174(10):1640-1648.
2. Ryskina KL, Halpern SD, Minyanou NS, Goold SD, Tilburt JC. Mayo Clin Proc. 2015;90(3):313-320.
3. Asch DA, Nicholson S, Srinivas S, Herrin J, Epstein AJ. JAMA. 2009;302(12):1277-1283.
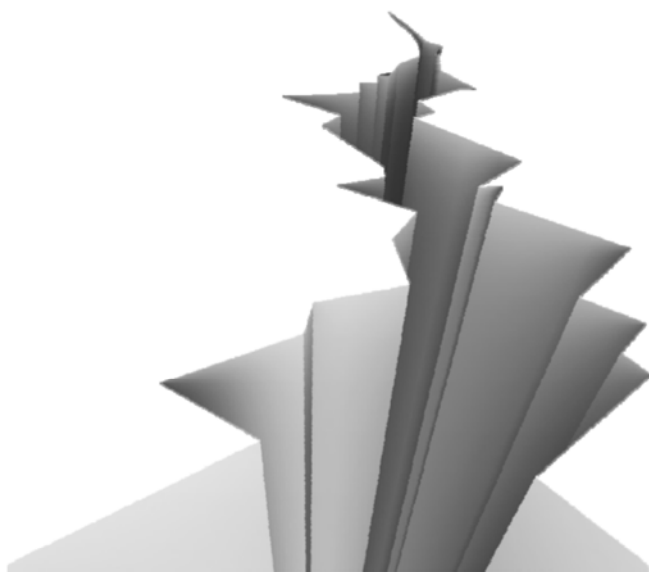
Need to start upstream.

1. Gupta R, Moriates C. *Acad Med.* 2017 May;92(5):598-601

Ripple effects from trainees' learning experiences eventually reach all corners of our health care system.

GAP:

Medical training programs lack formal and informal mechanisms for training health professionals about value.

1. Emanuel EJ. *JAMA*. 2006;296(9):1128-1131.
2. Jain CC, Aiyer MK, et al. *J Patient Saf*. November 2015.
3. Patel MS, Reed DA, et al. *JAMA Intern Med*. December 2013.
4. Leep Hunderfund AN, Dyrbye LN, et al. *Acad Med*. May 2016:1.
5. Mou D, Sarma A, Sethi R, Merryman R. *N Engl J Med*. 2011;364(10):e19.
6. Varkey P, Murad MH, et al. J Eval Clin Pract. 2010;16(6):1055-1062.
7. Gonzalo JD, Dekhtyar M, et al. *Acad Med*. April 2016.

We will bridge the gap.

Clinical environment

Educational enterprise

1. Gupta R, Arora VM. JAMA. 2015;314(22):2349-2350.

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$$\text{Value-Based Health Care} = \frac{\text{Outcomes that matter to patients}}{\text{Total Costs of Care}}$$

Robust Value-Based Health Care (VBHC) curriculum for ALL.
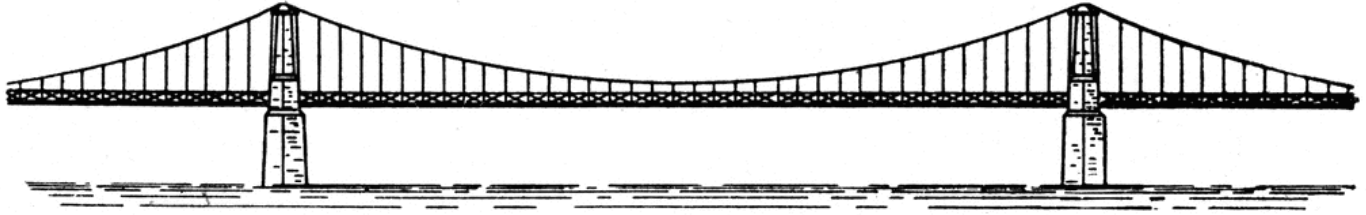
Value Improvement initiatives in learning environments.

Discovering Value-Based Health Care
Interactive Learning Modules from Dell Med

The first three modules, bundled as "Introduction to Value-Based Health Care," are available **free of charge**. The curriculum introduces:

- The concept of value and how to apply it into everyday practice
- How measuring outcomes that matter to patients is key to creating value
- How health care costs are calculated and how they affect patients

Receive a free certificate in value-based health care from Dell Medical School.

vbhc.dellmed.utexas.edu

The University of Texas at Austin
Dell Medical School

Contact: Chris Moriates, MD
CMoriates@austin.utexas.edu

Interactive: Learn while doing

MODULE 1 | Section 5

Unnecessary Care

IN THE GRAPH BELOW, SELECT EACH OF THE COMPONENTS OF WASTE TO FIND OUT MORE ABOUT THEM.

Unnecessary Services
85%

Missed Prevention Opportunities
75%

Prices That Are Too High
38%

Excess Administrative Costs
38%

Inefficiently Delivered Services
69%

MODULE 1 | Section 7

Care Redesign Case: Value-Driven Outcomes at University of Utah

THE UNIVERSITY OF UTAH'S VDO PROGRAM

In seeking to improve care value, a central challenge most healthcare delivery organizations face is their limited capacity to measure and analyze healthcare value, particularly around costs.

In 2012, University of Utah Health Care, under the leadership of Dr. Vivian Lee, initiated a large-scale effort to create a "value-driven outcomes" (VDO) tool that would provide clinicians and managers the ability to analyze actual system costs and patient measures.
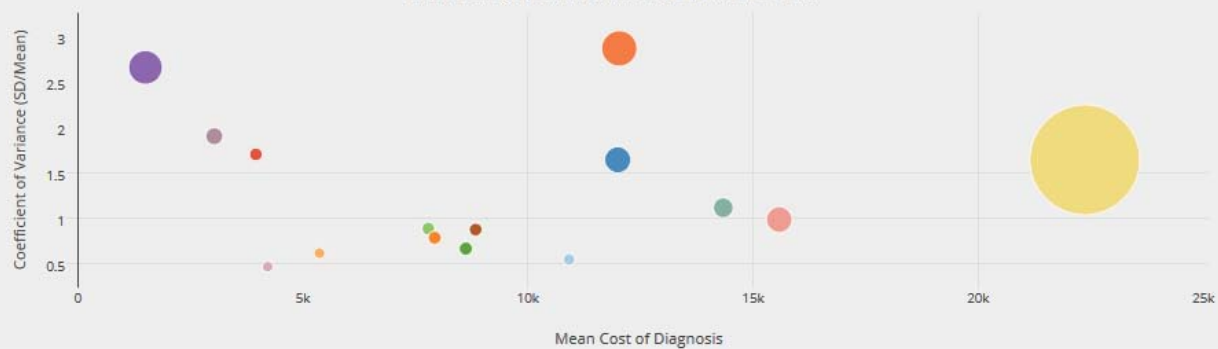
As we examine the following case, think about how to measurably improving value at the scale of an entire health care system and how to use data to help identify potential sources for improvement.

**Using Data to Identify Opportunities for
Improving Care for Patients**

OPPORTUNITY INDEX SCATTERPLOT (DIAGNOSIS)

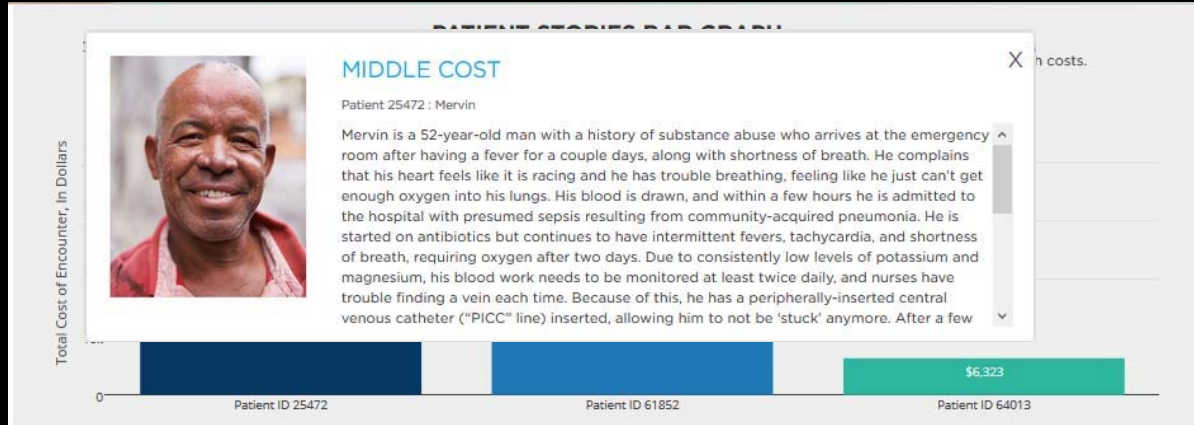Explore the graph. Then answer the questions below.

Of the below listed diagnoses, which represents the diagnosis with the largest opportunity index?

Acute kidney failure	Unspecified Septicemia	Diabetes with ketoacidosis type 1 [juvenile type]

PATIENT STORIES BAR GRAPH

Total Cost of Encounter, In Dollars

MIDDLE COST

Patient 25472 : Mervin

Mervin is a 52-year-old man with a history of substance abuse who arrives at the emergency room after having a fever for a couple days, along with shortness of breath. He complains that his heart feels like it is racing and he has trouble breathing, feeling like he just can't get enough oxygen into his lungs. His blood is drawn, and within a few hours he is admitted to the hospital with presumed sepsis resulting from community-acquired pneumonia. He is started on antibiotics but continues to have intermittent fevers, tachycardia, and shortness of breath, requiring oxygen after two days. Due to consistently low levels of potassium and magnesium, his blood work needs to be monitored at least twice daily, and nurses have trouble finding a vein each time. Because of this, he has a peripherally-inserted central venous catheter ("PICC" line) inserted, allowing him to not be 'stuck' anymore. After a few

Patient ID 25472   Patient ID 61852 $6,323
                                                    Patient ID 64013

30,014 Page views

3,707 Unique users
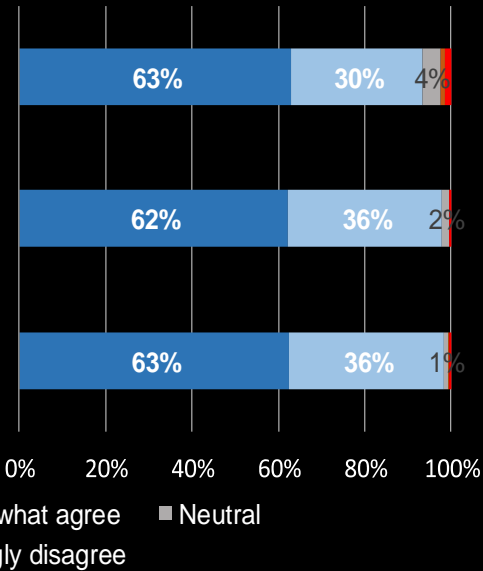
709 Registered users

+7 foreign countries

The content of the modules was aligned with the module outcomes (educational objectives).
- 63% | 30% | 4%

After completing the modules, I can define value in health care.
- 62% | 36% | 2%

After completing the modules, I can provide examples of low and high value care.
- 63% | 36% | 1%

0% 20% 40% 60% 80% 100%

- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree

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Choosing Wisely STARS
Students & Trainees Advocating for Resource Stewardship
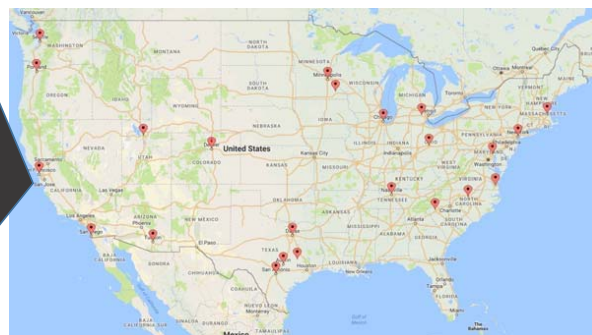
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STARS aims to catalyze grassroots, student-led initiatives to advance health care value in medical education.

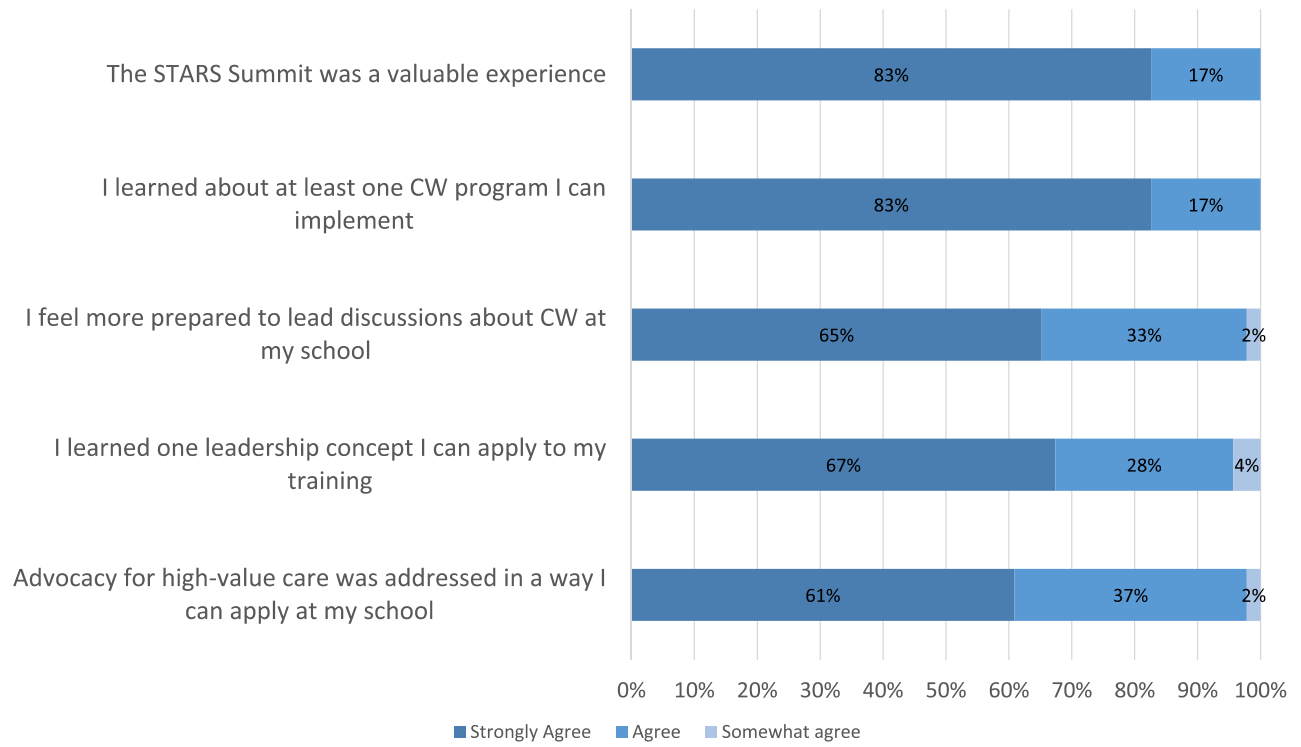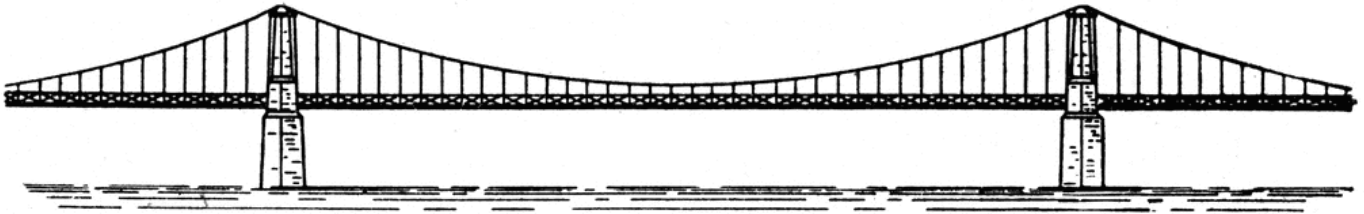2 first-year medical students from each of 25 medical schools across the US

Student Commitments

The STARS Summit was a valuable experience: Strongly Agree 83%, Agree 17%

I learned about at least one CW program I can implement: Strongly Agree 83%, Agree 17%

I feel more prepared to lead discussions about CW at my school: Strongly Agree 65%, Agree 33%, Somewhat agree 2%

I learned one leadership concept I can apply to my training: Strongly Agree 67%, Agree 28%, Somewhat agree 4%

Advocacy for high-value care was addressed in a way I can apply at my school: Strongly Agree 61%, Agree 37%, Somewhat agree 2%

■ Strongly Agree   ■ Agree   ■ Somewhat agree

What they have learned.

What they do.

Trainees involved in value improvement activities

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$$\text{Value-Based Health Care} = \frac{\text{Outcomes that matter to patients}}{\text{Total Costs of Care}}$$

WE CAN IMPROVE VALUE BY:

Improving outcomes for patients without raising costs

Maintaining good outcomes while decreasing costs

Improving outcomes dramatically for a smaller increase in costs

Improving outcomes for patients AND decreasing costs simultaneously

"Our north star – where we are headed – is trying to deliver Value to our patients, as defined by optimizing the health of our patients in a way that reduces cost. No matter where we sit in the health care system, we can all agree that is why we, the health care system, exists."

Kevin Bozic MD MBA,
Chair of Surgery and Perioperative Care,
Dell Medical School, 2016

For Example

Introducing a standardized hand-off tool and educational program to improve patient hand-offs at 9 pediatric residency programs.

Improving outcomes for patients without raising costs

Stammer AJ, Spector ND, Srivastava R, et al. Changes in medical errors after implementation of a handoff program. N Engl J Med 2014; 371:1803-1812

I-PASS
BETTER HANDOFFS. SAFER CARE.

I	Illness Severity	• Stable, "watcher," unstable
P	Patient Summary	• Summary statement • Events leading up to admission • Hospital course • Ongoing assessment • Plan
A	Action List	• To do list • Time line and ownership
S	Situation Awareness and Contingency Planning	• Know what's going on • Plan for what might happen
S	Synthesis by Receiver	• Receiver summarizes what was heard • Asks questions • Restates key action/to do items

Incidence of Medical Errors, Preventable Adverse Events, and Medical-Error Subtypes before and after Implementation of the I-PASS Handoff Bundle.

Table 2. Incidence of Medical Errors, Preventable Adverse Events, and Medical-Error Subtypes before and after Implementation of the I-PASS Handoff Bundle.

Variable	Before Implementation (N = 5516)	After Implementation (N = 5224)	P Value
	total no. (no./100 admissions)		
Overall medical errors	1349 (24.5)	981 (18.8)	<0.001
Preventable adverse events	261 (4.7)	173 (3.3)	<0.001
Near misses and nonharmful medical errors	1088 (19.7)	808 (15.5)	<0.001
Medical-error subtype			
Errors related to diagnosis (incorrect, delayed, omitted)	184 (3.3)	111 (2.1)	<0.001
Errors related to therapy other than medication or procedure	112 (2.0)	77 (1.5)	0.04
Errors related to history and physical examination	43 (0.8)	0	< 0.001
Other and multifactorial errors	239 (4.3)	106 (2.0)	<0.001
Medication-related errors	660 (12.0)	580 (11.1)	0.28
Procedure-related errors	83 (1.5)	85 (1.6)	0.49
Falls	13 (0.2)	8 (0.2)	0.37
Nosocomial infections	15 (0.3)	14 (0.3)	0.79

The NEW ENGLAND
JOURNAL of MEDICINE
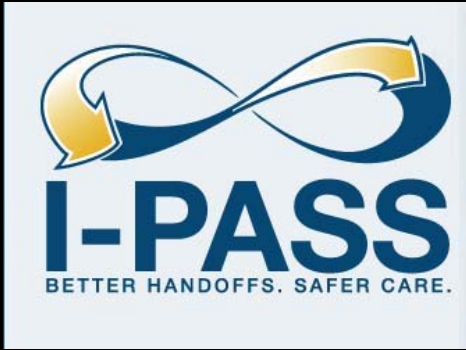
I-PASS was associated with a 23% relative reduction in the rate of all medical errors and a 30% relative reduction in the rate of preventable adverse events.

For Example

Maintaining good outcomes while decreasing costs

At UCSF, a surgeon "scorecard" that provided peer-comparison feedback on surgical supply costs.

Zygourakis CC, Valencia V, Moriates C, et al. Association between surgeon scorecard use and operating room costs. JAMA Surg. Published online December 07, 2016.

Corinna Zygourakis – a UCSF neurosurgery resident – had a great idea.

OR SCORE: OR Surgical COst REduction Project

Congress of Neurological Surgeons: September 27, 2015

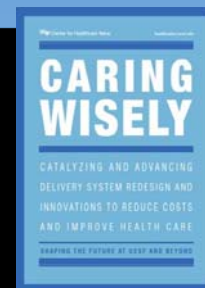Visible leader and champion

Content expertise

Surgeon Buy-in

Funded and hired project manager
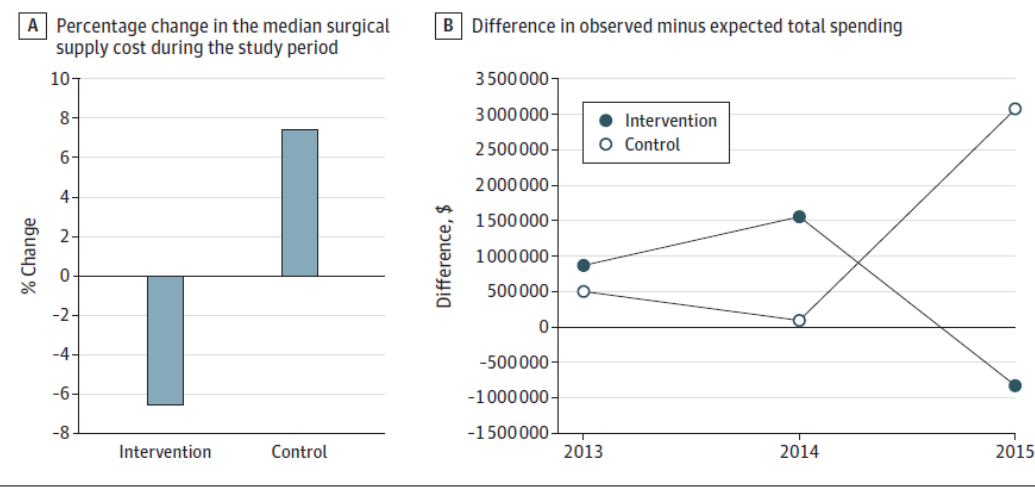
Data acquisition, analyses, design

Institutional buy-in + negotiated shared savings plan

CARING WISELY

CATALYZING AND ADVANCING
DELIVERY SYSTEM REDESIGN AND
INNOVATIONS TO REDUCE COSTS
AND IMPROVE HEALTH CARE

Association Between Surgeon Scorecard Use and Operating Room Costs

Corinna C. Zygourakis, MD; Victoria Valencia, MPH; Christopher Moriates, MD; Christy K. Boscardin, PhD;
Sereina Catschegn, MD; Alvin Rajkomar, MD; Kevin J. Bozic, MD, MBA; Kent Soo Hoo, PhD; Andrew N. Goldberg, MD, MSCE;
Lawrence Pitts, MD; Michael T. Lawton, MD; R. Adams Dudley, MD, MBA; Ralph Gonzales, MD, MSPH

Figure. Surgical Supply Costs in the Intervention vs Control Groups

A | Percentage change in the median surgical supply cost during the study period

B | Difference in observed minus expected total spending

A, Shown is the percentage change in the median surgical supply direct cost (in US dollars) during the study period (2015) in the intervention vs control groups. B, Shown is the difference between observed and expected total surgical supply spending between 2013 and 2015. Positive values indicate that the group was more costly than expected, and negative values indicate that the group was less costly than expected.

Association Between Surgeon Scorecard Use and Operating Room Costs

Corinna C. Zygourakis, MD; Victoria Valencia, MPH; Christopher Moriates, MD; Christy K. Boscardin, PhD;
Sereina Catschegn, MD; Alvin Rajkomar, MD; Kevin J. Bozic, MD, MBA; Kent Soo Hoo, PhD; Andrew N. Goldberg, MD, MSCE;
Lawrence Pitts, MD; Michael T. Lawton, MD; R. Adams Dudley, MD, MBA; Ralph Gonzales, MD, MSPH

Figure. Surgical Supply Costs in the Intervention vs Control Groups

[Graphic overlay: Saved More Than $1 Million…]

...age change in ...ply direct cost ...e study ...rvention vs ...n is the difference between observed and expected total surgical supply spending between 2013 and 2015. Positive values indicate that the group was more costly than expected, and negative values indicate that the group was less costly than expected.

For Example

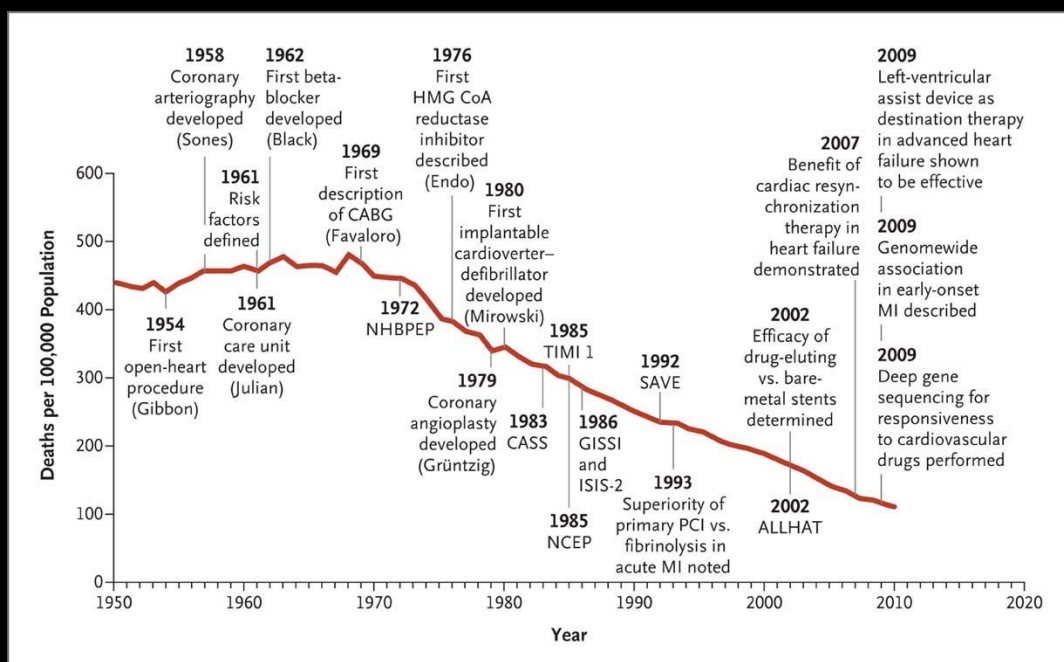Improving outcomes dramatically for a smaller increase in costs
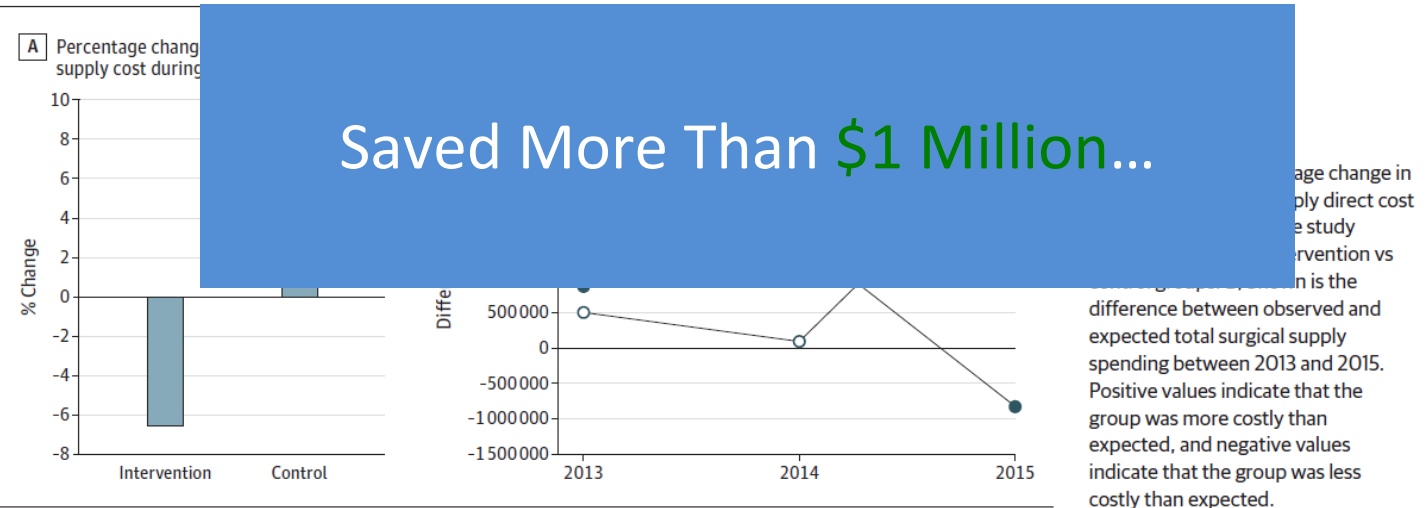
Treatments for acute myocardial infarction.

Nabel EG and Braunwald E. A tale of coronary artery disease and myocardial infarction. N Enlg J Med 2012; 366:54-63.

Decline in Deaths from Cardiovascular Disease in Relation to Scientific Advances.

Nabel EG, Braunwald E. N Engl J Med 2012;366:54-63

In the 1970s, in-hospital mortality from acute myocardial infarction was approximately 15%.

With medical advances over the years, including coronary angioplasty and stenting, and more potent medications (such as clopidgrel (Plavix)), in-hospital mortality has been reduced to below 7%.

Nabel EG and Braunwald E. A tale of coronary artery disease and myocardial infarction. N Enlg J Med 2012; 366:54-63.

For Example

Improving outcomes for patients AND decreasing costs simultaneously

A program to reduce unnecessary red blood cell transfusions.

Anthes E. Evidence-based medicine: save blood, save lives. Nature 520, 24–26, 2015.

Alvin Rajkomar
UCSF hospital medicine fellow (2014)

The dataset

Date of Transfusion	Clinical Service	Attending Physician	Hemoglobin Prior to Transfusion	...23 other variables
7/1/2013	Hospital Medicine	Alvin Rajkomar	7	...
7/2/2013	Hospital Medicine	Alvin Rajkomar	7.1	...
7/3/2013	Hospital Medicine	Alvin Rajkomar	12	...
7/4/2013	Hospital Medicine	Alvin Rajkomar	6.5	...
7/5/2013	Hospital Medicine	Alvin Rajkomar	4.3	...
7/6/2013	Hospital Medicine	Alvin Rajkomar	7.2	...
7/7/2013	Hospital Medicine	Alvin Rajkomar	6.9	...
7/8/2013	Hospital Medicine	Alvin Rajkomar	6.5	...
7/9/2013	Hospital Medicine	Alvin Rajkomar	7.8	...
7/10/2013	Hospital Medicine	Alvin Rajkomar	5.9	...

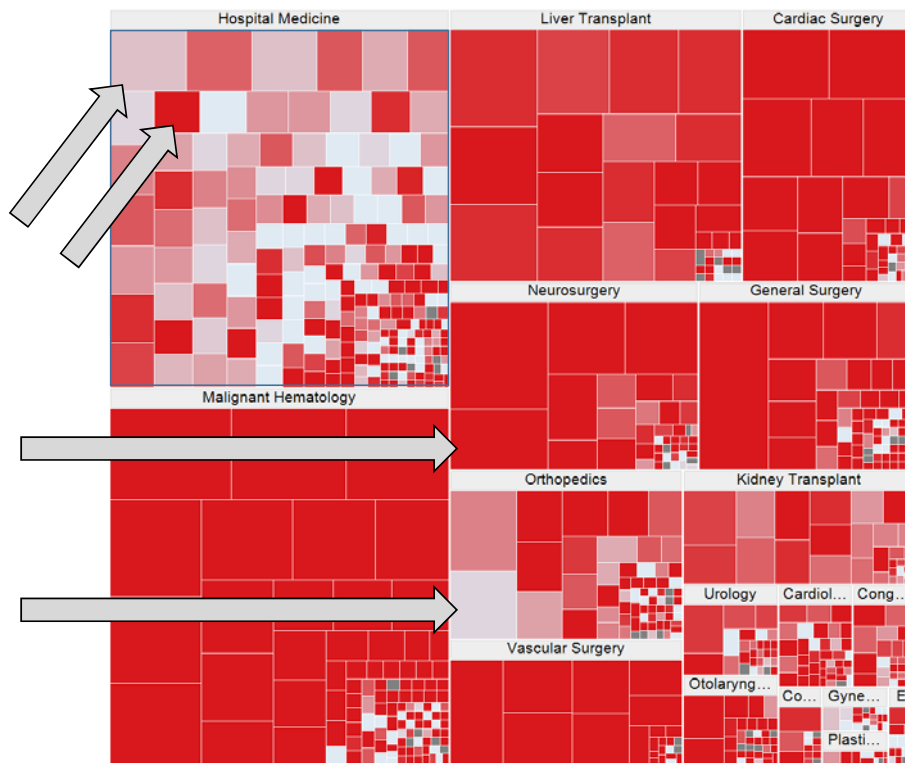Clinical Service   Hemoglobin Threshold   Liberal threshold   Restrictive threshold

Slide and Data Analyses by Alvin Rajkomar, MD (UCSF)

Slide and Data Analyses by Alvin Rajkomar, MD (UCSF)

Hospital Medicine

Slide and Data Analyses by Alvin Rajkomar, MD (UCSF)

Slide and Data Analyses by Alvin Rajkomar, MD (UCSF)

1

Blood Transfusion Reduction (2013-2014)

Blood Transfusions   XL

Total Units of Blood Used Per Discharge
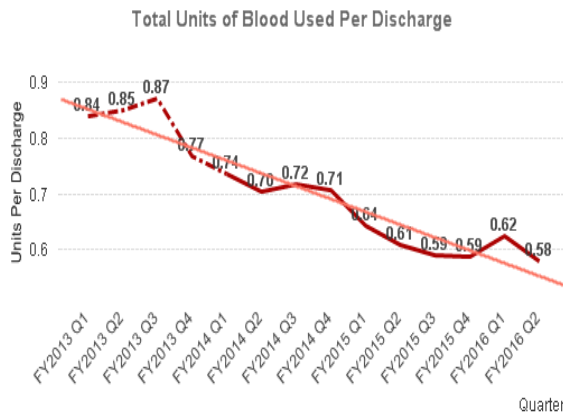
Transfusions Cost Savings   XL

FY	Total Units	Total Cases	Avg Unit Cost	Total Cost
2013	24,848	29,899	$258.00	$6,410,784
2014	22,035	30,781	$246.25	$5,426,119
2015	19,643	32,316	$239.00	$4,694,677
2016	10,595	17,594	$243.33	$2,578,117

Saved to Date: $3,045,188

Saved Q1+ Q2
FY16 vs FY15: $-204,166

Cut Out Waste
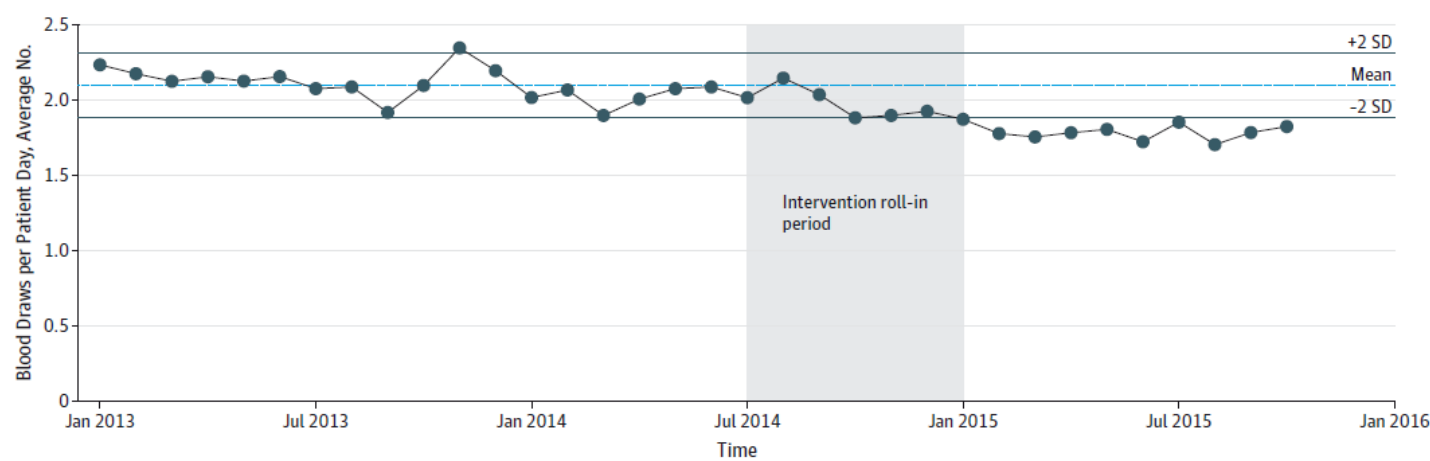
Choosing Wisely®

An initiative of the ABIM Foundation

Daily Labs

Dan Wheeler
UCSF internal medicine resident (2015)

JAMA Internal Medicine

Figure. Interrupted Time-Series Analysis Showing Average Number of Phlebotomies per Patient on the Internal Medicine Service

Average number of phlebotomies per patient per day with introduction in July 2014 of the "Think Twice, Stick Once" program to reduce the number of phlebotomies per day.

"COST" Framework

Intervention		Description	Example
C	*Culture*	Valuing cost-consciousness and resource stewardship at the individual and team level	Hospital-wide campaign led by peer-champions to reduce lab tests overuse
O	*Oversight*	Requiring accountability for cost-conscious decision-making at both a peer and organizational level	Requiring attending to review labs residents order to reduce overuse
S	*Systems Change*	Creating systems to make cost-conscious decisions using institutional policy, decision-support tools, and clinical guidelines	EHR displays cost of lab tests next to order for specific tests
T	*Training*	Providing knowledge & skills clinicians need to make cost-conscious decisions	Lecture or workshop on ordering of lab tests

Educate -> Activate Trainees!
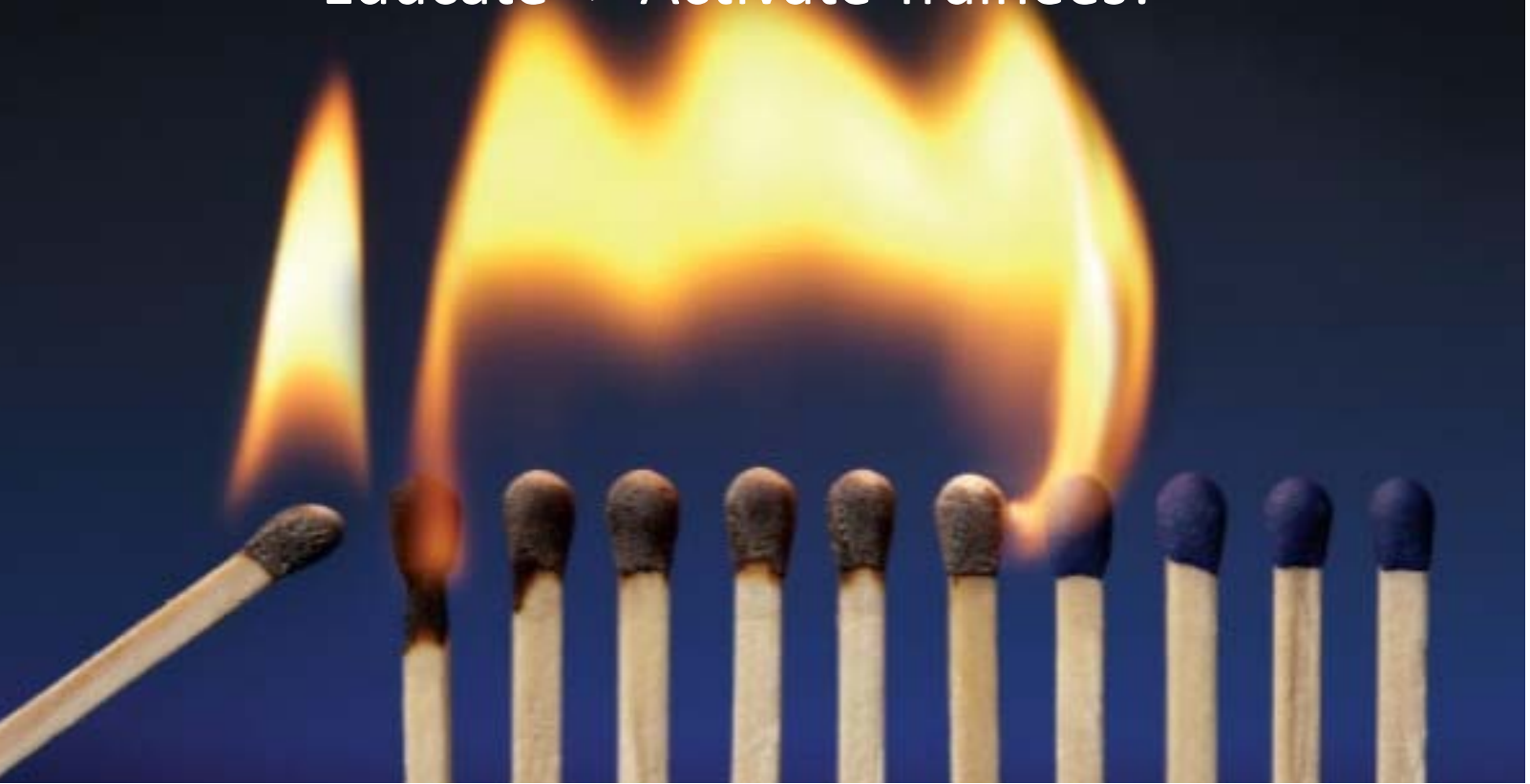
Lead From Where You Stand

8 to 800

Thank You

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